

9.6000 (and 1013, 1139)

20328  
S/188/60/000/006/001/011  
B101/B204

AUTHORS: Iyevskaya, N. M., Umarkhodzhayev, R. M.

TITLE: Conditions for observing the fine structure of signals of nuclear magnetic resonance

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 3, fizika, astronomiya, no. 6, 1960, 3-7 Vol. 15

TEXT: For the purpose of obtaining undistorted signals of nuclear magnetic resonance (nmr), it is necessary that corresponding experimental conditions be observed. Therefore, the effect of tuning the resonance circuit containing the specimen upon the shape of the dispersion component  $u$  and the absorption component  $v$  of the nmr was studied. The change in voltage in the case of occurrence of  $v$  and  $u$  signals is understood to be a change in  $R$  and  $L$  of the circuit, and for the emf  $e_v$  and  $e_u$   $e_v = k(pL\omega\Delta L - R\Delta R)/(R^2 + p^2L^2)$ ;  $e_u = k(R\omega\Delta L + pL\Delta R)/(R^2 + p^2L^2)$  (1) is written down. Here  $p = (\omega_0^2 - \omega^2)/\omega$ ;  $\omega_0$  denotes the natural frequency

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of the circuit,  $\omega$  - the generator frequency,  $k$  - a coefficient depending on the experimental conditions chosen. From (1) it follows that by changing the tuning of the circuit either the signal components or their mixture is recorded. For a weak highfrequency field  $H_1$  and a slow

passage through resonance the following is written down:

$\gamma^2 H_1^2 T_1 T_2 \ll 1$  (2), and  $\sqrt{\omega} T_2 < 1/2$  (3).  $a = \gamma dH_m/dt$  is the passage

velocity. If the relaxation times  $T_1$  and  $T_2$  are unknown, it is difficult to choose the amplitude of  $H_1$  in such a manner that the signals are

recorded with a maximum amplitude. Therefore, the question was studied in what way the shape of the signals changes if the condition (2) is not satisfied. The experiments showed that both decreased passage velocity and increase of the amplitude of the highfrequency field distort the signals with given modulation rate. The oscillations occurring during passage through resonance are explained by a simplified representation of the motion of the magnetization vector  $\vec{M}$  with large  $T_1$  and  $T_2$ . In

this case, only the applied magnetic fields  $H_0$  and  $H_1$  produce an effect.

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In a system of coordinates  $x_r, y_r, z_r$ , rotating round the direction  $\vec{H}_0 \uparrow \vec{z}_r$  with the field frequency  $\omega$ ,  $\vec{M}$  performs a precession round the effective field  $\vec{H}_{er}$  (Fig. 3). Seen from the viewpoint of the observer,  $\vec{M}$  shows two motions: 1) precession round the constant field  $\vec{H}_0$  with the Larmor frequency  $\omega = \gamma H_0$ , 2) nutation with the frequency  $\omega' = \gamma H_{er}$ . According to the ratio between nutation period  $2\pi/\gamma H_1$  and the time  $T_{res}$  of the passage through the resonance ( $T_{res} = 2\gamma H_1/a$ ), different conditions apply to  $\vec{M}$ . The following is written down:  $(2\pi/\gamma H_1)/T_{res} = \pi \lambda$  (4), where  $\lambda = a/\gamma^2 H_1^2$ . If  $T_{res} < 2\pi/\gamma H_1$ , and  $\lambda > 1$ ,  $\vec{M}$  deviates only little from the equilibrium value  $M_0$  during passage through resonance. In the opposite case,  $\vec{M}$  performs several rotations round  $\vec{H}_{er}$  during passage through resonance, whereby the distortions observed are caused. For the shape of the signals the following was found under the conditions  $\lambda > 1$ ,  
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and  $T_1 = T_2 = T \gg T_{\text{res}}$ , as well as linear modulation of the constant magnetic field  $H_m = -at/\gamma$  :

$$v = -\frac{M_0 \gamma}{\sqrt{\gamma^2 + \beta^2}} \left( \frac{1}{T} + \frac{1}{\sqrt{\gamma^2 + \beta^2}} \right) \left( \frac{\gamma H_1}{\frac{1}{T^2} + \gamma^2 H_1^2} + \sqrt{D_1^2 + D_2^2} e^{-\frac{t+\tau}{T}} \sin[\gamma H_1(t+\tau) - \psi] \right).$$

$$u = \frac{M_0 \gamma}{\sqrt{\gamma^2 + \beta^2}} \left\{ 1 + \frac{t}{\sqrt{\gamma^2 + \beta^2}} \left( \frac{1}{T} + \frac{1}{\sqrt{\gamma^2 + \beta^2}} \right) \times \right. \quad (5)$$

$$\left. \times \left( \frac{1}{T} + \sqrt{D_1^2 + D_2^2} e^{-\frac{t+\tau}{T}} \cos[\gamma H_1(t+\tau) - \psi] \right) \right\}.$$

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$\tau = \gamma H_1 / a$ ;  $\psi = \arctan D_2 / D_1$ .  $D_1$ ,  $D_2$  are coefficients, which depend on  $a$ ,  $H_1$  and  $T$ . Using the equations by F. Bloch, (5) was solved in a system of coordinates  $x_0$ ,  $y_0$ ,  $z_0$ , which revolves round  $\vec{H}_0$  with the frequency  $\omega$ , and whose  $z_0$  axis lies in the direction  $\vec{H}_{er}$  (Fig. 3). Analysis of Eq. (5) shows that a distortion of the fine structure of the nmr signals is avoided, if the conditions  $\lambda \gg 1$ ,  $T < T_{res}$  are adhered to. The amplitude of  $H_1$  may be determined by measuring the nutation frequency. There are 3 figures and 7 references: 4 Soviet-bloc and 2 non-Soviet-bloc.

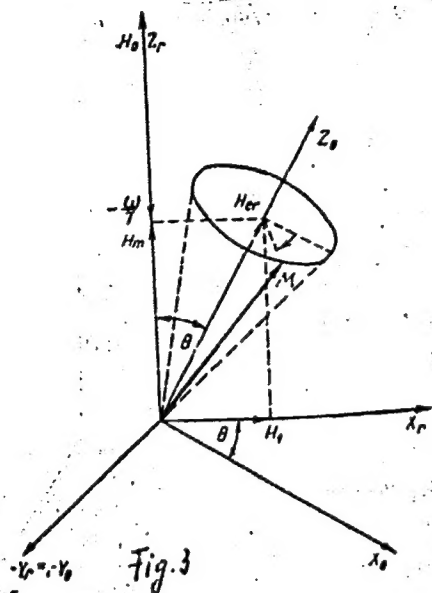
ASSOCIATION: Moskovskiy gosudarstvennyy universitet, Kafedra obshchey fiziki dlya khimikov  
(Moscow State University, Department of General Physics for Chemists)

SUBMITTED: February 2, 1960

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Conditions for observing...

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B101/B204



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33207

S/141/61/004/005/009/021  
E032/E114

24,7000 (1143, 1144, 1160)

AUTHORS: Iyevskaya, N.M., Kvlividze, V.I., and  
Umarkhodzhayev, R.M.

TITLE: On the observation of nutation in nuclear magnetic  
resonance experiments

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy,  
Radiofizika, v.4, no.5, 1961, 903-911

TEXT: The authors report a study of the form of the  
absorption and dispersion signals which are produced in a strong  
high-frequency magnetic field. Explicit expressions are derived  
for the z-component of the magnetization vector and the form of  
the absorption and dispersion signals in the special case of  
equal relaxation times. An approximate solution is also obtained  
for the case of linear modulation of the magnetic field.  
Conditions are derived for the appearance of the nutation of the  
magnetization vector. It is pointed out that the nutation of the  
experimental work carried out by the present authors indicates  
that great care must be exercised in distinguishing between fine  
structure of NMR signals and the nutation effect. The rate at

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f

On the observation of nutation in ... <sup>33207</sup> S/141/61/004/005/009/021  
E032/E114

which resonance position is traversed must be such that  $|\lambda| \gg 1$   
where

$$\lambda = a/\gamma^2 H_1^2, \quad (2)$$

$a = |\gamma| dH_m/dt$ , and  $H_1$  is the amplitude of the high-frequency magnetic field. When  $|\lambda| \ll 1$  and the relaxation times are comparable or greater than the resonance value  $T_r$  the form of the signal is distorted and oscillations appear on passing through resonance. It is pointed out that the phenomenon of nutation can be used to determine the amplitude of the high-frequency magnetic field by measuring the period of the oscillations at resonance. The period is given by:

$$1/f_1 = 2\pi/|\gamma| H_1.$$

There are 4 figures and 9 references: 5 Soviet-bloc and 4 non-Soviet-bloc. The English language references read as follows:  
Ref. 1: B.A. Jacobsohn, R.K. Wangsness,  
Phys. Rev., v. 73, 942 (1948).

Card 2/3

33207

On the observation of nutation ... S/141/61/004/005/009/021  
E032/E114

Ref.4: F. Bloch, Phys. Rev., v.70, 460 (1946).

Ref.6: H.C. Torrey, Phys. Rev., v.76, 1059 (1949).

Ref.9: A.G. Redfield, Phys. Rev., v.98, 1787 (1955).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet  
(Moscow State University)

SUBMITTED: September 16, 1960

Card 3/3





L 17827-65

ACCESSION NR: AP4047866

SUBMITTED: 27Jan64

ENCL: 01

SUB CODE: EC

NO REF SOV: 002

OTHER: 005

Card 3/4

L 17827-65

ACCESSION NR: AP4047866

ENCL: 01

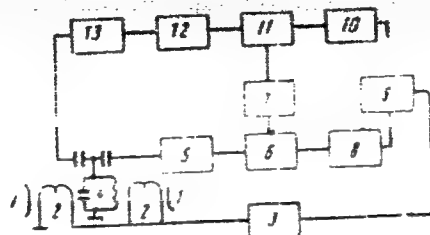


Fig. 1. Block diagram of a spin oscillator

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L 60111-01  
ACCESSION

8/0141/64/007/006/1207/1210

AUTHOR: Usarkhodzhayev, R. M.

TITLE: Contribution to the theory of spin generators — 21

SOURCE: IVUZ. Radiofizika, v. 7, no. 6, 1964, 1207-1210

TOPIC TAGS: spin generator, amplitude limitation, stationary frequency, Larmor

Card 1/2

ACCESSION NR: APPROXIMATE

frequency difference. ORIG. SRC. \_\_\_\_\_  
\_\_\_\_\_ Universitet (Moscow State University)

Card 2/2

AUTHOR: Iyevskaya, N. M.; Umarhodzhayev, R. M.

TITLE: Concerning the spin generator

SOURCE: Elektrichestvo, no. 7, 1965, 57-65

TOPIC TAGS: nuclear spin, electromagnetic wave, electronic oscillator, nuclear magnetic resonance, electromagnetic wave generation

ABSTRACT: The generation of coherent electromagnetic resonance (NMR) for the generation of coherent electromagnetic radiation within the low-frequency range from several thousand and up to 100 MHz is described. An abstract of the article is given.

Card 1/1

L 63799-65

ACCESSION NR: AP5018220

The low frequency oscillator for use as a source of R. M. Umar

controlled/ modulation of a signal  
The application of frequency must be much greater than

frequencies (2,000 Mc) is used -  
specimen is subjected to a low-frequency field component parallel to the con-  
stant field, and a high-frequency component perpendicular to it. The result-  
ing size of the specimen is the full modulation under

with the same low frequency

trace

ACQUISITION NO. 155-1222

... is still unclassified. The

this case) and the possibility of possible field intensity tracking is about 4 kc. The minimum relaxation of transverse relaxation time at which generation occurs is of the order of the order of the constant field is

cession and the circuit frequency. The

... of the ... in the ...

a field-modulating frequency of 2 cps. voltage from the detectors

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L 63799-65

ACCESSION NR: AP5018220

2  
applied to vertical plates of the oscillograph, while the horizontal plates were driven by the modulating voltage. By manipulating the circuit fre-

SUBMITTED: 03Jan65

Encl.

NR REF SOV: 018

OTHER: 00010

FSE v.1, no.9

UMAROV, A.

Structure of the Sary-Tash - Dzhar-Kak gentle anticline. Uzb.  
geol.zhur. no.5:74-78 '59. (MIRA 13:5)

1. Institut geologii i razrabotki neftyanykh i gazovykh  
mestorozhdeniy AN UzSSR.  
(Kagan District--Geology, Structural)

UMAROV, A.

Formation of local folds in the Sarytash-Dzharkak gentle anticline. Dokl. AN Uz. SSR no. 11:25-28 '59. (MIRA 13:4)

1. Institut geologii i razrabotki neftyanykh i gazovykh mestorozhdeniy. Predstavleno chlenom-korr. AN UzSSR G.A. Mavlyanovym.

(Uzbekistan--Folds(Geology))

UMAROV, A.

Tectonics, and oil and gas potentials of the southeastern part of  
the Bukhara-Karsha arch. Uzb. geol. zhur. no.4:23-31 '60.  
(MIRA 13:10)

1. Institut geologii i razrabotki neftyanykh i gazovykh mesto-  
rozhdeniy AN UzSSR.

(Bukhara-Karsha region--Petroleum geology)

(Bukhara-Karsha region--Gas, Natural--Geology)

RESNETKINA, N.N.; YAKUBOV, Kh.; SLAVIN, B.A.; POSTNOV, Yu.V.;  
SOKOLOVSKAYA, Ye.A.; UMAROV, A.; BARON, V.A.

Construction of vertical drainage in the Golodnaya Steppe. Mat.  
po proizv. sil. Uzb. no.15:281-306 '60. (MIRA 14:8)

1. Institut vodnykh problem i gidrotekhniki AN UzSSR; Uzbekskiy  
gidrogeologicheskii trest i Glavgolodnostepstroy.  
(Mirzachul' region--Drainage)

UMAROV, A.

Water balance observations in the Margelan system. Vop. gidr.  
no.3:62-66 '61. (MIRA 15:4)

(Margelan region--Irrigation)

UMAROV, A.; RYZHKOV, O.A., doktor geol.-min. nauk, prof., otv. red.;  
MOSHCHENKO, Z.V., red.; KARABAYEVA, Kh.U., tekhn. red.

[Tectonics, and gas and oil potentials of the Bukhara-  
Karshi structures] Tektonika i gazonaftenosnost' iugo-  
vostoka Bukhara-Karshinskoi sistemy struktur. Tashkent, Izd-  
vo Akad. nauk UzSSR, 1962. 159 p. (MIRA 15:10)  
(Uzbekistan--Gas, Natural--Geology)  
(Uzbekistan--Petroleum)

USSR/Cultivated Plants. Potatoes. Vegetables. Melons.

Abs Jour: Ref Zhur-Biol., No 5, 1958, 20313.

Author : T. Nasyrova, A. Umarov.  
Inst : Tashkent Agricultural Institute.  
Title : The Effect of Pre-Sowing Cutting of Tubers on the Potato Crop. (vliyaniye predposevnoy rezki klubney na urozhay kartofelya).

Orig Pub: Sots. s.-kh. Uzbekistana, 1957, No 1, 78-80.

Abstract: On the Test and Training Farm of Tashkent Agricultural Institute in 1952-1956 potato tubers cut during the fall yielded some 2.5 tons per hectare more than those cut right before sowing. For the best method of storage, the tubers were given a slight incision in the fall-winter period and broken before planting. The sowing

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These merely incised tubers yielded a boost of 3 tons per hectare in the harvest above that of whole tubers.

APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001857930009-

Card : 2/2

USSR/Cultivated Plants Potatoes. Vegetables. Melons.

Abs Jour : Ref Zhur Biol., No 12, 1958, 53617

Author

USSR/Cultivated Plants - Potatoes. Vegetables. Melons.

M-3

Abs Jour : Ref Zhur - Biol., No 7, 1958, 29787

Author : Umarov, A.A.

Inst : -

Title : New Prospective Double Yielding Potato Varieties.

Orig Pub : Sots. s. kh. Uzbekistana, 1957, No 8, 74-75.

Abstract : No abstract.

Card 1/1

UMAROV, A.A.; YAROVENKO, G.I.

Effect of ammonia and nitrate nutrition on development and  
yield of cotton under the conditions of varying water supply. Uzb.  
biol. zhur. 7 no.1:17-19 '63 (MIRA 17:7)

1. Vsesoyuznyy ordena Lenina nauchno-issledovatel'skiy institut  
khlopkovodstva.

YAROVENKO, G.I.; UMAROV, A.A.

Effect of the size of fractions of urea-formaldehyde fertilizers  
on the biochemical capacity of soils for nitrate accumulation  
and the yield of cotton. Uzb. biol. zhur. 7 no.6:62-66 '63.

(MIRA 17:6)

1. Vsesoyuznyy ordena Lenina nauchno-issledovatel'skiy institut  
khlopkovodstva.

S/167/62/007/004/001/002  
D234/D308

24.4300

AUTHORS:

Umarov, A.I., and Fayzullayev, D.F.

TITLE:

Mutually penetrating motion of incompressible  
viscous two-phase media in a circular cylin-  
drical pipe

PERIODICAL:

Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya  
tekhnicheskikh nauk, no. 4, 1962, 45 - 56

TEXT:

The authors quote the differential equations of  
Kh.A. Rakhmatulin for stabilized motion of media as above, in cylin-  
drical coordinates. The motion of the media is assumed to be recti-  
linear and parallel to the axis of the pipe (Oz axis). The equations  
are linearized by neglecting several small terms, and then solved by  
applying Laplace transformation. Expressions for the velocities and  
densities of the two media are obtained in terms of cylindrical func-  
tions. A formula for the pressure drop along the pipe is derived. Two  
particular cases are considered as examples and illustrated with

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APPROVED FOR RELEASE: 03/14/2001

S/167/62/007/004/001/002  
D234/D308

Mutually penetrating motion ...

graphs. There are 3 figures.

ASSOCIATION:

Institut mekhaniki AN UzSSR (Institute of Mechanics,  
AS UzSSR)

SUBMITTED:

March 1, 1961

Card 2/2

UMAROV, A.I.; LATIPOV, K.Sh.

Interpenetrating movements of noncompressible viscous two-phase media between two penetrable planes. Izv. AN Uz. SSR, Ser. tekhn. nauk 9 no.3:22-28 '65. (MIRA 18:8)

1. Institut mekhaniki i Vychislitel'nyy tsentr AN UzSSR.

*Umarov, A.S.*  
UMAROV, A.S., dotsent.

Cancer of Meckel's diverticulum. Khirurgia no.7:74 J1 '55.  
(MLRA 8:12)

1. Iz kliniki gosspital'noy khirurgii Tashkentского meditsinskogo  
instituta.  
(ILEUM--CANCER)

ASTROV, Mikhail Sergeyevich(1882-1957); VASILENKO, L.D., prof., red.;  
UMAROV, A.S., dots., red.; BOROVKOVA, Ye.V., dots., red.;  
ASHARAPOVA, M.A., dots., red.; NURMUKHAMEDOV, R.M., kand.  
med. nauk, red.; AKSEL'ROD, M.B., red.; TSAY, A.A., tekhn.  
red.

[Selected works] Izbrannye trudy. Tashkent, Medgiz, 1962.  
350 p. (MIRA 16:4)

(SURGERY)



U.S.S.R.

✓ Influence of refrigeration of raw cottonseed oil on its refining. G. I. Tverdokhil and A. U. Umarov. *Mashinostroeniye-Zhivotnaya Prom.* 20, No. 2, of 2 (1955). Data are presented to show that the color of refined oil is improved, and refining losses (soapstock) are appreciably reduced when the oil is immediately cooled after extra. and prior to its refining. Vladimir N. Kravkovsky.

MARKMAN, A.I.; UMAROV, A.U.

Chromatographic separation of  $\beta$ -sitosterol from cottonseed  
oil. Uzb.khim.zhur. no.1:63-65 '59. (MIRA 12:6)

1. Institut khimii rastitel'nykh veshchestv Akademii nauk UzSSR.  
(Sitosterol) (Cottonseed oil)

MARKMAN, A.L., doktor khimicheskikh nauk; UMAROV, A.U.

Chromatography of cottonseed oil in a column with magnesium oxide.  
Masl.-zhir. prom. 27 no.7:14-16 J1 '61. (MIRA 14:7)

1. Institut khimii rastitel'nykh veshchestv Akademii nauk  
UzSSR.

(Cottonseed oil—Analysis)  
(Chromatographic analysis)

BURNASHEVA, S.N., inzh.; UMAROV, A.U., inzh.

Determining neutral oil and nonglyceride complexes in cotton  
oil. Masl.-zhir.prom. 28 no.4:20-22 Ap '62. (MIRA 15:5)

1. Institut khimii rastitel'nykh veshchestv AN UzSSR.  
(Cottonseed oil--Testing)

SHUSTANOVA, L.A.; KURACHKO, K.; MARKMAN, A.L.; UMAROV, A.U.

Oils from the plants of the Papaveraceae family. Uzb.khim.zhur. 8  
no.5:38-42 '64. (MIRA 18:5)

1. Institut khimii rastitel'nykh veshchestv AN UzSSR.

AKRAMOVA, A.S.; GLUSHENKOVA, A.I.; MARKMAN, A.L.; STEPANENKO, G.A.; UMAROV, A.U.;  
CHERNENKO, T.V.

Oilseeds of some species of leguminous plants. Uzb. khim. zhur. 8 no.6:  
31-36 '64. (MIRA 18:4)

1. Institut khimii rastitel'nykh veshchestv AN UzSSR.

MARKMAN, A.L.; UMAROV, A.U.; BAHAM, B.M.; DOMANSKAYA, K.K.

Oils from certain species of Cruciferae. Khim.prirod.sosd.  
no.4:295-296 '65.

(MIRA 1981)

1. Institut khimii rastitel'nykh veshchestv AN UzSSR.

Submitted January 27, 1965.

BABAM, B.M.; MARKMAN, A.L.; UMAROV, A.U.

Acorn oil of *Quercus robur*. Uzb. khim. zhur. 9 no. 4:28-32  
'65. (MIRA 18:12)

1. Institut khimii rastitel'nykh veshchestv AN UzSSR. Submitted  
Dec. 18, 1963.

UMAROV, A. U. Cand Tech Sci -- (diss) " *Certain problems of* ~~Some questions on~~ water

~~services~~ *in the* under ~~operating~~ conditions of Tadzhikistan." Stalinabad, 1957.

17 pp. (Acad Sci UzSSR. Inst of Water Problems and Hydraulic Engineering.) 100 copies.

(KL, 8-58, 106)

UMAROV, A.U.

Brief description of rivers and types of water diversion  
installations of Tajikistan. Izv.Otd.est.nauk AN Tadsh.  
SSR no.10:47-56 '55.

(MLRA 9:10)

1. Tadzhikskiy sel'skokhozyaystvennyy institut.  
(Tajikistan--Rivers)

UMAROV, A. U., CAND GEOL ~~AND MINERAL~~ SCI, "TECTONICS AND  
CERTAIN PROBLEMS OF THE GAS- AND <sup>petroleum</sup> ~~OIL~~-BEARING PROPERTIES OF  
THE MESO- AND CENOZOIC DEPOSITS OF THE SOUTHEASTERN BUKHARA-  
KARSHIN ARCH <sup>-like</sup> ~~UPLIFT~~." TASHKENT, 1961. (ACAD SCI UZSSR.  
INST OF GEOLOGY AND <sup>Working</sup> ~~DEVELOPMENT~~ OF PETROLEUM AND GAS DEPO-  
SITS). (KL-DV, 11-61, 213).

UMAROV, A.U.

Mesozoic and Cenozoic tectonic development of the southeastern  
part of the Bukhara-Karshi archlike upland. Vop.geol.Uzb. no.2:  
131-145 '61. (MIRA 15:12)  
(Uzbekistan—Geology, Structural)

UMAROV, B. U.

Umarov, B. U. -- "Fundamental Properties of an Independent Inverter with Commutation Capacitance and Additional Valves." Min Higher Education USSR, Central Asiatic Polytechnic Inst, Tashkent, 1955 (Dissertation for the Degree of Candidate of Technical Sciences)

SU: Knizhnaya Letopis', No. 24, Moscow, Jun 55, pp 99-104

SOV/112-58-2-3002

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1958, Nr 2, p 188 (USSR)

AUTHOR: Khamudkhanov, M. Z., and Umarov, B. U.

TITLE: Properties and Characteristics of an Autonomous Inverter with Additional Valves Supplying an Adjustable Induction-Motor Drive  
(Svoystva i kharakteristiki avtonomnogo invertora s dobavochnymi ventilyami, pitayushchego reguliruyemyy asinkhronnyy elektropriivod)

PERIODICAL: Izv. AN UzSSR, ser. tekhn. n., 1957, Nr 1, pp 3-11

ABSTRACT: In selecting the circuit and parameters of an inverter, it is necessary, first of all, to ensure stable switching of valve currents under various operating conditions of the "inverter-induction-motor set," and to secure a practically-sinusoidal shape of the output voltage. In most circuits, the switching capacitors are connected directly to the terminals of inverter transformer windings, which facilitates securing the sinusoidal output voltage; however, the latter aggravates the current switching and tends to flip the inverter at lower frequencies, i. e., does not permit extending the speed-adjustment

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SOV/112-58-2-3002

Properties and Characteristics of an Autonomous Inverter with Additional Valves . . .

range of the induction motor toward lower speeds. Stable inverter switching can be secured by connecting additional non-controlled valves between the transformer windings and switching capacitors. A 6-phase parallel inverting circuit with 3 smoothing chokes is the most efficient for the above conditions. Approximate calculations and some investigation results are presented, obtained with the above scheme, studied in a laboratory and including an A51-4, 4.5-kw squirrel-cage motor and with a 3.5/3 kw higher-slip motor. The inverter efficiency has been found to be 0.97 at 40-70 cps, and 0.52-0.8 at 5-30 cps. While the circuit without additional valves showed unstable operation at frequencies below 20 cps even with large capacitance, the above new circuit shows perfectly unstable (probably a misprint in the original; "stable" makes more sense - E.A.C.) operation at frequencies of 4-5 cps. Advantages of the above circuit are: high switching stability under both steady-state and dynamic conditions of the set, a high overload capacity, a wide range of speed regulation, small values of switching capacitors, and good utilization of the transformer and valves. Disadvantages of the circuit are: a somewhat poorer voltage

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SOV/112-58-2-3002

Properties and Characteristics of an Autonomous Inverter with Additional Valves . . .

wave form, particularly at low frequencies, short-time 1.5-normal overvoltage, and also the necessity for additional non-controlled valves. The above circuit can be recommended for adjustable-speed drives with heavy starting conditions and fluctuating loads. Bibliography: 5 items.

I. L. R.

Card 3/3

SOV/112-58-2-3001

Translation from: Referativnyy zhurnal, Elektrotehnika, 1958, Nr 2,  
pp 187-188 (USSR)

AUTHOR: Umarov, B. U.

TITLE: Fundamental Properties of an Independent Inverter with Capacitive  
Switching and Additional Valves (Osnovnyye svoystva nesavisimogo invertora  
s yemkostnoy kommutatsiyey i dobavochnymi ventilyami)

PERIODICAL: Tr. In-ta energ. AS UzSSR, 1957, Nr 10, pp 21-53

ABSTRACT: The diagram of an independent (or autonomous) parallel-type  
capacitive-switching inverter is considered. It has additional non-controlled  
valves  $BH_1$ ,  $BH_2$  (fig. 1) intended to secure stable operation at low frequencies  
under near-short circuit conditions and/or small capacitance  $C$  of the switching  
capacitors. In this diagram, at a frequency  $f$  lower than the critical frequency  
 $f_k$  (which depends on the load parameters and the capacitance  $C$ ), the voltage  
on the capacitor  $C$ , after its recharge, keeps the necessary polarity during  
each half-cycle up to the moment of firing of the next  $BH$  (fig. 2, curve 1) so  
that the inverter does not flip; curve 2 shows that voltage on  $C$  in a conventional

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Fundamental Properties of an Independent Inverter with Capacitive Switching . . . .

inverter scheme. At  $f > f_k$  the phenomena in this diagram do not differ from those in a conventional inverter. Expressions for  $f_k$  are deduced for the case of the load consisting of R and L in parallel (under oscillatory, boundary, and aperiodic conditions; an ideal inverter transformer is assumed, and the inverter input current  $I_0 = \text{const}$  because  $L_0 \rightarrow \infty$ ). Experimental external characteristics are given, taken with and without BH, for various C, f and  $\cos \varphi$  of the load. With  $\cos \varphi < 1$  and  $f < f_k$ , the effective value of the load voltage  $U_n$  is higher for the circuit with BH than for the inverter circuit without BH. Another peculiarity of the diagram is the fact that  $U_n$  grows with a decrease of the  $\cos \varphi$ . Under the conditions of  $f < f_k$ , the wave shapes  $U_n$  and  $i_n$  deteriorate with an increase of  $f_k$  (i.e., with decreasing C or increasing load inductance). At a particularly low frequency, the  $U_n$  and  $i_n$  curves acquire the shape of impulses (due to differentiation of the inverter transformer); to improve the curve shapes, it is recommended that an additional capacitor  $C_{\text{den}}$  be connected across the load. An experimental investigation has been conducted of the fig. 1 diagram operating on an internal counter-EMF (an inverter driven

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Fundamental Properties of an Independent Inverter with Capacitive Switching . . . .

by the network). In this case, the inverter can operate within the range of negative lead angles  $\beta$ , delivering both active  $P$  and reactive  $Q$  power to the AC network. An experimental curve representing the function  $P = f(\beta)$  within  $\beta = -60^\circ + 60^\circ$ , under a constant input DC voltage  $E_0$ , has a U-shape with the minimum near  $\beta = 0$ ; for higher  $C$ , the curve moves upward. The value of  $Q$ , with  $E_0 = \text{const}$ ,  $C = \text{const}$ , and  $\beta < 0$ , grows with the absolute value of  $\beta$ . Experiments have shown that, with the above scheme and  $\beta = -30^\circ - 50^\circ$ , the installed capacitor power (determined as  $0.5 CU^2 C_{\max}$ ) is 2-3 times lower than the reactive power delivered to the network by a conventional inverter without BH (operating with  $\beta = +28^\circ - 47^\circ$ ) and with capacitors directly connected on the AC side. An experimental investigation was also conducted of a 3-phase inverter scheme with additional non-controlled BH valves supplying an induction motor. Both schemes were investigated with and without an inverter transformer; in the latter case, the induction-motor stator winding was star-connected, its neutral was connected to the  $+E_0$ , and the winding leads were connected to BH valve anodes. Both schemes, particularly the one with-

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Fundamental Properties of an Independent Inverter with Capacitive Switching . . . .

out the inverter transformer, permit operating the induction motor at low frequencies (5-50 cps) and lower values of C than in the case of an inverter without BH. However, the output voltage and the induction motor winding current curves are not so good. Bibliography: 11 items.

V.A.L.

Card 4/4

UMAROV, D., Cond Tech Sci (diss) -- "Increasing the precision of a technological system of refined-sugar production". Tashkent, 1960. 15 pp (State Committee on Higher and Inter Spec Educ of the Council of Ministers Uzbek SSR, Central Asia Polytech Inst), 150 copies (KL, No 15, 1960, 136)

UMAROV, D.U.; ZELIKMAN, I.F.

Refining of granulated products of the manufacture of sugar.  
Izv.vys.ucheb.zav.; pishch.tekh. no.2:121-127 '59.  
(MIRA 12:8)

1. Sredneaziatskiy politekhnicheskii institut.  
(Sugar manufacture)

KHALILOV, D.; UMAROV, E.

Combined solution of some problems in the standardization of  
technological processes in the manufacture of machinery. (27.  
AN Uz. SSR. Ser. tekhn. nauk 8 no.3:81-83 '64. (MFA 1211,

1. Institut mekhaniki i vychislitel'nykh tsentrom AN UzSSR.

ABDUMALIKOV, A.; ABDURAZAKOV, A.; ABDURAZAKOVA, F.; GROMOV, K.; UMAROV, G.

Determination of the relative intensities of conversion lines  
based on the blackening density. Izv.AN Uz.SSR.Ser.fiz.-mat.nauk  
6 no.1:37-43 '62. (MIRA 15:4)

1. Tashkentskiy politekhnicheskii institut.  
(Beta-ray spectrometer)

YAKUNIN, G.I.; UMAROV, E.A.

Using a natural thermocouple in studying the method of  
face turning. Izv. AN Uz. SSR. Ser. tekhn. nauk 9 no. 1:  
28-34 '65 (MIRA 19:1)

1. Tashkenskii politekhnicheskii institut. Submitted September 29,  
1964.

YERKIN, A. A. 1965, 2.A.

Calibration of a natural thermocouple. Izv. AN Uz. SSR. Ser.  
tekh. nauk 9 no.2:54-57 '65. (MIRA 18:8)

YAKUNIN, G.I.; UMAROV, E.A.; YAKUBOV, F.Ya.

Investigating causes for the presence of stability peaks in  
the cutting speed-cutting tool stability relation. Izv. AN  
Uz. SSR. tekhn. nauk. 9 no.4:37-43 '65. (MIRA 18:10)

1. Tashkentskiy politekhnicheskiy institut.

L 4110-66

LWT(m)/EPF(c)/EWP(1)/T/EWP(t)/EWP(k)/EWP(b) IJP(c) JD/DJ

ACC NR: AP5025669

UR/0167/65/C00/004/0037/0043

AUTHOR: Yakunin, G. I.; Umarov, E. A.; Yakubov, F. Ya.

TITLE: Investigation of the causes of toughness maxima as a function of the relation of cutting speed to the toughness of the cutting tool

SOURCE: AN UzSSR. Izvestiya. Seriya tekhnicheskikh nauk, no. 4, 1965, 37-43

TOPIC TAGS: cutting tool, toughness, metal film, metal oxidation, metal cutting, high speed metal cutting

ABSTRACT: It has been established that the toughness of the cutting tool is a non-monotonic function of the cutting speed; as the cutting speed increases, up to a point, the toughness increases and reaches a maximum, beyond which it decreases. A theory accounting for this phenomenon is given by Avakov (Fizicheskiye osnovy teorii stoykosti rezhushchikh instrumentov, Moscow, Mashgiz, 1960), who also points out that it is analogous to wear resistance during bearing contact and infers that both phenomena have common roots. During bearing contact, wear resistance sharply increases owing to the formation of oxide films on the friction surfaces; a similar phenomenon is assumed to occur during the cutting of metals by means of hard alloy-tipped cutting tools. Experiments with this cutting in different atmospheres (nitrogen, oxygen, air) were performed to determine the relationship between various cutting parameters and the nature (and the presence or absence) of the oxide films

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L 4110-66

ACC NR: AP5025669

forming during the cutting. It is established that the toughness maxima are definitely attributable to the presence of oxide films on the friction surfaces and that these maxima are conditioned by the strength of these films. A comparatively simple method of determining the toughness maxima is described: the experiments begin with a low cutting speed (say, 20 m/min); after the thermo-e.m.f. for this speed is recorded, a higher speed is applied, and so on. It is shown that the presence of several toughness maxima is due to the formation of different oxide films on the friction surfaces, such that each film is maximally strong at a different temperature. Further, by means of preliminary machining in regimes corresponding to its toughness maximum, the toughness of a cutting tool may be markedly enhanced. Orig. art. has: 4 figures

ASSOCIATION: Tashkentskiy politekhnicheskiy institut (Tashkent Polytechnic Institute)

SUBMITTED: 20Oct64

ENCL: 00

SUB CODE: IE, MT, 04, 56

NO REF SOV: 010

OTHER: 000

BVK  
Card 2/2

AUTHOR: Umarov, G. (Director.)

TITLE: The inexhaustible source

SOURCE: Nauka i tekhnika, no. 9, 1964, 19-20

TOPIC TAGS: solar energy, solar furnace, organo metallic compound, polymer, metallizing

ABSTRACT: This is chiefly a popular account of the importance of the solar furnace. The author points out what would happen if the sun's rays did not fall on the earth for a few days, lists the ways in which the sun's energy is used and at what rate. In the earth, solar energy is converted into heat, light, and sound energy by man. Materials that have been used in large reflectors to concentrate the sun's rays are discussed. Metallized polymeric films proved to be more economical than metal alone, but they tend to crack about rivet points, diminishing efficiency and focusing accuracy. Such films attached to solid bases offer

L 57608-65  
ACCESSION NR: AP5014968

readily harnessed to pump water from wells or to convert salt water to fresh. The Physical Institute of the Academy of Sciences in the Uzbek SSR has designed and used a 2-meter reflector that produces a temperature of 3000C at the focal point. It is concluded that solar furnaces will soon become much more widely used. Orig. art. has: 2 figures.

Uzbek SSR. Tashkent. Inst. of Physics. Akhmedov, A. A. (Physicotechnical)

SUBMITTED: CO

ENCL: CC

SUB CODE: 2A, MT

NO REF SOV: COO

OTHER: COO

*PR*  
Card 2/2

24(7)

AUTHORS: Bondarenko, G.N., Voznesenskiy, B.N., and <sup>06555</sup>SOV/166-59-4-6/10  
Umarov, G.Ya.

TITLE: Investigation of the Form of the  $\beta$ -Spectrum of RaD

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-  
matematicheskikh nauk, 1959, Nr 4, pp 42-46 (USSR)

ABSTRACT: For the investigation of the  $\beta$ -spectrum of RaD in the region of small energies the author developed a special electrostatic spectrometer with a focusing and an accelerating field. For a variation of the accelerating field and a constant focusing field the  $\beta$ -spectrum can be investigated in a certain interval for the same energy. Here the absorption of the  $\beta$ -particles by the plate of the recorder is the same in the whole investigated region, and consequently it does not influence the form of the spectrum. The results of the measurements in essential agree with the results of Kobayashi [Ref 4]. There are 6 figures, 1 table, and 4 references, 1 of which is Soviet, 2 American, and 1 Japanese.

ASSOCIATION: Sredneaziatskiy politekhnicheskiy institut ([Soviet] Central Asian Polytechnical Institute)

SUBMITTED: January 22, 1959  
Card 1/1

ABDURAZAKOV, A.A.; ABLJRAZAKOVA, F.M.; GROMOV, K.Ya.; DZHELEPOV, B.S.;  
UMAROV, G.Ya.

Studying the spectrum of conversion electrons in neutron-deficient  
lutecium isotopes. Izv. AN Uz.SSR. Ser. fiz.-mat. nauk 3:53-60  
'61. (MIRA 14:8)

1. Sredneaziatskiy politekhnicheskii institut i Ob"yedinennyy  
institut yadernykh issledovaniy.  
(Lutecium--Isotopes) (Electrons--Spectra)

UMAROV, G.Ya.; ALIMOV, A.K.; OVECHKIN, N.F.

High-speed electrodynamic vacuum pulse valve. Prib. i tekhn. eksp.  
6 no.1:178-179 Ja-F '61. (MIRA 14:9)

1. Fiziko-tekhnicheskiiy institut AN Uzbekskoy SSR.  
(Valves)

ANDURAZAKOV, A.A.; ABDURAZAKOVA, F.M.; GROMOV, K.Ya.; UMAROV, G.Ya.

New isotope  $\text{Er}^{159}$ . Zhur. eksp. i teor. fiz. 41 no.6:1729-1732  
D '61. (MIRA 15:1)

1. Ob'yedinennyy institut yadernykh issledovaniy i Tashkentskiy  
politekhnicheskiy institut.

(Erbium--Isotopes)

40061

S/166/62/000/003/009/010  
B163/B104

24.2.20  
AUTHORS:

Kotov, Ya. P., Umarov, G. Ya., Fayzullayev, D. F.

TITLE:

On the stationary flow of a conducting medium in presence of a magnetic field

PERIODICAL:

Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 3, 1962, 75 - 80  
vol. 6

TEXT: The system of hydrodynamic equations for the motion of multiphase media is generalized for the case where one of the media is conducting. The special case of two incompressible fluids in a magnetic field is treated, one of which is conducting and the other not. For this purpose, an additional electromagnetic term is introduced into the equation of motion for the conducting fluid and the Maxwell equations are brought into the system. As an example, the stationary one-dimensional flow of a conducting and of a non-conducting fluid between two parallel plates and subject to a magnetic field perpendicular to them is studied. Equations for the velocity and field distribution in this flow are derived. The conducting fluid is decelerated in the magnetic field and its velocity may become smaller than  
Card 1/2

On the stationary flow ...

S/166/62/000/003/009/010  
B163/B104

that of the non-conducting fluid, even if the conducting fluid is less viscous.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzSSR (Physicotechnical Institute of the AS UzSSR)

SUBMITTED: September 19, 1961

Card 2/2

40558  
S/166/62/000/004/007/010  
B112/B186

24.6715  
AUTHORS:

Kotov, Ya. P., Umarov, G. Ya.

TITLE:

Establishment of thermal equilibrium between a neutral gas and electrons

PERIODICAL:

Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 4, 1962, 52-56

TEXT: The rate of attaining temperature balance between the electrons and atoms (molecules) of a two-component system is studied. Proceeding from the Boltzmann equation

$$\frac{\partial f}{\partial t} = St_{ea}(f) \quad (1)$$

in the absence of external fields and introducing Chapman's [1] term for the collision of electrons with neutrals

$$\frac{\partial f}{\partial t} = \frac{1}{v^2} \frac{\partial}{\partial v} \left[ \frac{T_n}{m_a} \frac{v^3}{\lambda(v)} \frac{\partial f}{\partial v} + \frac{m_0}{m_a} \frac{v^4}{\lambda(v)} f \right] \quad (2)$$

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Establishment of thermal ...

S/166/62/000/004/007/010  
B112/B186

with  $\lambda(v) = \lambda_n v^n$  for the electron distribution function  $f$  and using the equation  $dW_e/dt = \int \frac{m_e v^2}{2} \frac{\partial f}{\partial t} d\vec{v}$  (3) for the electron energy  $W_e$ , the authors derive expressions for  $dT_e/dt$  and  $dT_a/dt$ . Integration of these expressions gives the exchange periods

$$\tau_n = \frac{1}{1+n_e/n_a} \cdot \frac{3\sqrt{\pi} 2^{n/2} m_a \lambda'_n}{8(2m_e T_K)^{1/2} \Gamma(3-n/2)},$$

where  $\lambda'_n = (T_K/m_e)^{n/2} \lambda_n$  and  $T_K = (n_e T_{e0} + n_a T_{a0})/(n_e + n_a)$ . In the second chapter generalizations of the initial equations are discussed.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzSSR  
(Physico-technical Institute AS UzSSR)

SUBMITTED: November 18, 1961

Card 2/2

ABDURAZAKOV, A.A.; ABDURAZAKOVA, F.M.; GROMOV, K.Ya.; DZHELEPOV, B.S.;  
UMAROV, G.Ya.

Conversion electron spectra of neutron-deficient erbium  
isotopes. Izv. AN Uz. SSR. Ser. fiz.-mat. nauk (no.5:69-76  
'62. (MIRA 15:11)

1. Tashkentskiy politekhnicheskii institut i Ob'yedinennyy  
institut yadernykh issledovaniy.  
(Erbium--Isotopes) (Electrons--Spectra)

UMAROV, G. YA.

S/166/63/000/001/003/010  
B104/B186

AUTHORS: Umarov, G. Ya., Alimov, A. K., Ovechkin, N. F.

TITLE: Investigation of a quickly acting electrodynamic pulsed vacuum valve

PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Soriya fiziko-matematicheskikh nauk, no. 1, 1963, 34 - 38

TEXT: An electrodynamic pulsed valve with elastically deformed membrane suited for plasma injectors is described. The main part of this valve is a steel membrane shown in Fig. 1. The discharge current of a condenser passes through the copper coil and interacts with the induction current in the copper ring soldered to the steel membrane. A study of the membrane motion shows that to ensure a rigid construction the membrane has to be screwed on both sides with thick washers; this makes it possible to increase the diameter of the central clamp bolt up to 100 mm, through which the high-voltage lead-in of the electrodynamic gun is taken. The membrane thickness is 2.4 mm and the coil consists of 3 copper bar windings with a thickness of 8 mm. With an increase of the peripheral clamping pressure the minimum opening voltage increases and the time of the opened valve

Card 1/2

Investigation of a quickly ...

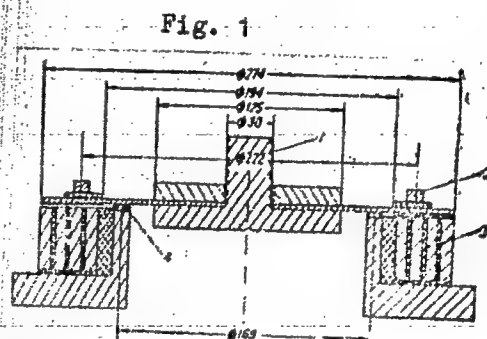
S/166/63/000/001/003/010  
B104/B186

state decreases at equal voltages and diameter of inner clamp bolt. The time of the open-valve state can be adjusted in the range between 20 and 250  $\mu$  sec. There are 4 figures.

ASSOCIATION: Fiziko-tehnicheskiy institut AN UzSSR (Physicotechnical Institute AS UzSSR)

SUBMITTED: June 28, 1962

Fig. 1. Membrane with coil. Legend:  
(1) Clamp bolt; (2) peripheral rubber hold-down; (3) pulse coil; (4) teflon sealing.



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L 18520-63 ENG(k)/EWT(1)/BDS/EEC(b)-2/ES(w)-2 AFFTC/ASD/ESD-3/IJP(C)/  
SSD/APWL Pz-4/P1-4/Po-4/Pab-4 AT  
ACCESSION NR: AP3000221 S/0166/63/000/002/0056/0060

AUTHOR: Umarov, G. Ya.

TITLE: Transverse injection of plasmoids

SOURCE: AN UzSSR. Izv. Seriya fiziko-matem. nauk, no. 2, 1963, 56-60

TOPIC TAGS: plasma, oscillation, instability, magnetic field

ABSTRACT: A plasma torus is formed by the simultaneous injection of plasma clouds into an adiabatic enclosure in a direction perpendicular to the magnetic field. The interaction of the plasma with the magnetic field induces damped oscillations in the torus. The author has analyzed these oscillations with and without damping. The plasma resistance is shown to introduce a damping factor inducing an exponential decay in the oscillation amplitude. It is further shown that the system is inherently stable. Orig. art. has: 24 equations.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzSSR (Institute of Physical Technology, Academy of Sciences, Uzbek SSR)

SUBMITTED: 23Nov62

DATE ACQ: 12Jun 63

ENCL: 00

SUB CODE: PH

NO REF SOV: 000

OTHER: 000

Card 1/1

A. A. ROV, A. A.; ABDURAZAKOV, A. A.; GNATOVICH, V. : GROMOV, K. Ya.; UMAROV, G. Ya.

"Conversion Electrons of Lu<sup>163</sup>."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22  
Feb 64.

Tashkent Polytechnical Inst; Joint Inst Nuclear Res.

ACCESSION NR: AP4038419

S/0166/64/000/002/0042/0049

AUTHOR: Abdumalikov, A. A.; Abdurazakov, A. A.; Gromov, K. Ya.; Mukhtasimov, F. N.; Umarov, G. Ya.

TITLE: Investigation of the spectrum of conversion electrons of erbium and holmium isotopes with  $T_{1/2}$  is equal to or less than 18 kiloseconds

SOURCE: AN UzSSR. Izv. Seriya fiziko-matematicheskikh nauk, no.2, 1964, 42-49

TOPIC TAGS: erbium, holmium, isotope, conversion electron, multipole order

ABSTRACT: Using a  $\beta$  - spectrograph with a constant magnetic field and photographic electron registration the authors studied the spectrum of conversion electrons of erbium and holmium fractions obtained by radiating a tantalum target with 600 MeV protons on the synchrocyclotron of the Ob'yedinennyy institut yadernykh issledovaniy (United Institute of Nuclear Research). The  $\beta$  spectrograph sources were prepared electrolytically. The authors compared experimental and theoretical relationships for different multipole orders of  $\gamma$  transitions. In the spectrum of conversion electrons of the holmium fraction the authors observed lines, the intensity of which decreases with a half life period of less than two hours. These lines were not observed in the spectrum of the erbium fraction. Weak conversion lines were observed in the spectrum of conversion electrons of the holmium fraction. The authors did

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ACCESSION NR: AP4038419

not succeed in their attempt to determine to which known isotope these lines belong.  
Orig. art. has: 7 tables and 1 diagram.

ASSOCIATION: TASHPI Ob'yedinennyy institut yadernykh issledovaniy (TASHPI United  
Institute of Nuclear Research)

SUBMITTED: 19Aug63

DATE ACQ: 05Jun64

ENCL: 00

SUB CODE: NP

NO REF SOV: 008

OTHER: 003

Card 2/2

UMAROV, G.Ya.; TRUKHCV, V.S.

Experimental study on the generation of shock waves in the  
pulse breakdown of liquids. Izv. AN Uz. SSR Ser. fiz.-mat.  
nauk 8 no.3:56-60 '64. (MIRA 17:10)

1. Fiziko-tekhnicheskii institut AN UzSSR.

L 26670-65 EWT(1)/EWP(m) Pd-1  
ACCESSION NR: AP5003313

S/0166/64/000/006/0069/0073

AUTHORS: Umarov, G. Ya.; Trukhov, V. S.

TITLE: Experimental investigation of the dynamics of development  
of a gas cavity during pulsed breakdown of a liquid

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk,  
no. 6, 1964, 69-73

TOPIC TAGS: cavitation, shock wave, acoustic wave, bubble formation

ABSTRACT. The purpose of the work was to trace experimentally the  
development of the gas cavity formed during pulsed breakdown of a liquid  
when ordinary commercial water in a configuration having a free sur-  
face is made to break down electrically. The apparatus was described  
by the authors elsewhere (Izv. AN SSSR seriya fiz.-mat. nauk, 1964,  
no. 3). High-speed photographs were taken with an SFR-2N camera  
under continuous-speed conditions in the time-magnification mode.

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L 26670-65

ACCESSION NR: AP5003313

The results have shown that in the case of a pulsed electric breakdown accompanied by generation of a powerful shock wave, the produced gas cavity executes several pulsations as the center of the cavity moves towards the free surface. The pulsations of the cavity are accompanied by acoustic radiation of pressure waves. The reflection of the shock wave and of the secondary positive-pressure waves from the free surface of the liquid, in the form of rarefaction waves with negative pressure, leads to cavitation in the entire volume of the chamber. Orig. art. has: 4 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzSSR (Physicotechnical Institute AN UzSSR)

SUBMITTED: 15Jun64

ENCL: 00

SUB CODE: ME, GP

NR REF SOV: 002

OTHER: 001

Card

2/2

SECRET

TOPIC TAGS: solar energy; conversion; solar power; photovoltaic; silicon; semiconductor

AUSTRIA; solar power; photovoltaic; silicon; semiconductor; solar energy; conversion; solar power; photovoltaic; silicon; semiconductor

L 52575-65

ASSOCIATION of zik's tekhnicheskoye inzheneriye AN SSSR (Physics and Engineering

*3ah*  
Card 2/2

I. 52576-65    ЗНАТ(а)/ЭНП(1)/ЭНП(т): ЭНП(т). 5

АВТОРСКОЕ ПРАВО ЗАЩИЩЕНО

AUTHOR: Смаилов, Г. Я.; Когуров, Н. В.; Дерзайко, В. П.; Смаилов, А.

TITLE: Experimental determination of the shape of the reflecting surface of an inflatable film concentrator

SOURCE: Geliotekhnika, no. 1, 1965, 24-27

TOPIC TAGS: film concentrator, solar energy converter, inflatable film concentrator, reflector shape, polyethylene terephthalate film

1. 257-258

1. 257-258

2. 257-258

high values, the shape gradually approaches a spherical segment. Orig. art. has:  
2 figures, 2 tables, and 7 formulas.

ASSOCIATION: Fiziko-tekhnicheskii institut AN UzbSSR (Physics and Engineering)

2/2

TITLE: Concentrator with an asbestos-cement base

SOURCE: Zhurnal tekhnicheskoy fiziki

ABSTRACT: The authors used a mirror surface of metallized polyethylene terephthalate  
in an asbestos-cement base to concentrate solar radiation.

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L 52574-65

ACCESSION NR: AP5012027

to 0.86 determined earlier) is explained by the scattering of radiant energy due to small  
holes in the material. The material is made by the presence of holes made

and that it can be built in large sizes and various configurations. Orig. art. has: 1

NO REF. BY: AND

Card 2/2

L 52576-65 ENT(m)/ENP(1)/ENP(t)/ENP(b) JD

ACCESSION NR: AP5012030

CP 5277-65 001 000 10004/00

AUTHOR: Umarov, G. Ya.; Kordub, N. V.; Kuyubevskiy, Yu. Ye.; Alimov, A. A.

TITLE: ...

...

TOPIC TAGS: ...

...  
tekhnicheskoy institut AN UZSSR. Physics and Engineering Institute AN UZSSR. The

L 52578-65

ACCESSION NR: AP5012030

SUBMITTED: 15 NOV 64

ENCL: 00

SUB CODE: 00

NO REF SOV: 006

OTHER: 000

9/8/82

L 24857-66 EWT(m)/EWP(v)/EWP(j)/T WW/RM

ACC NR: AP6009441 (A)

SOURCE CODE: UR/0377/65/000/003/0041/0048

AUTHORS: Umarov, G. Ya. (Candidate of physico-mathematical sciences); Vil'kova, S. N.; Ayzenshtat, Ye. L.; Novikova, I. A.; Sutyagina, V. M.

ORG: Physicotechnical Institute, AN UzSSR (Fiziko-tehnicheskiy institut AN UzSSR)

TITLE: Producing aluminum mirrors on asbestos cement by the conversion method

SOURCE: Geliotekhnika, no. 3, 1965, 41-48

TOPIC TAGS: solar energy conversion, metal plating, asbestos product, aluminum, epoxy plastic, resin, light reflection coefficient/ ED-5 resin

ABSTRACT: The use of low-cost asbestos cement as the body of solar concentrators is described. Epoxy resin ED-5 is used to create a smooth surface on one side of the cement for metallization. This resin shows a small shrinkage as compared with other materials. The resin (15--20 g) with 8% hardener was applied to a 12 x 6-cm plate of asbestos cement and was pressed with a steel beam weighing 3 kg. It was shown that an optically accurate mirror surface can be created by the conversion method (see Fig. 1). A study of the mirror layer showed that its adhesion

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L 24357-66

AGC NR: AP6009441

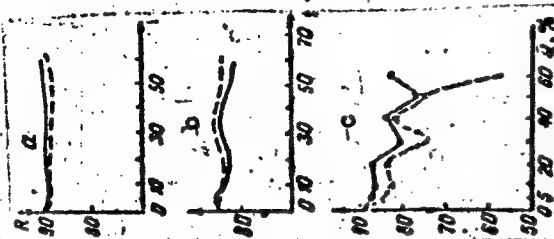


Fig. 1. Reflection factor before and after (dotted and continuous curves) conversion versus amount of faience flour (a), graphite (b), and sawdust (c) added to resin.

exceeded by a factor of 5--6 the adhesion of a mirror surface produced by vaporization in a vacuum. Causes of fogging of the reflecting surface with time are explained, and methods of their elimination are shown. Orig. art. has: 5 photographs, 1 graph, and 1 table.

SUB CODE: 10, 20/ SUBM DATE: 23Apr65/ ORIG REF: 002

2/2 dda

ACCESSION NR: AP5016401

UR0120 /65/000/003/0224/0225  
621.373.43

AUTHOR: Umarov, G. Ya.; Trukhov, V. S.

TITLE: Generator of high-voltage rectangular pulses

SOURCE: Priory i tekhnika eksperimenta, no. 3, 1965, 224-225

ABSTRACT: A pulse generator is described which is a generator of high-voltage rectangular pulses.

ABSTRACT: The paper describes a generator of high-voltage rectangular pulses. The pulse duration is variable in the range from 10<sup>-6</sup> to 10<sup>-3</sup> sec. The pulse amplitude is variable in the range from 10<sup>3</sup> to 10<sup>4</sup> V. The pulse duration is variable in the range from 10<sup>-6</sup> to 10<sup>-3</sup> sec. The pulse amplitude is variable in the range from 10<sup>3</sup> to 10<sup>4</sup> V.

not exceed  $2 \times 10^{-6}$  sec for the leading edge and  $2 \times 10^{-3}$  sec for the trailing edge. Orig. art. has 1 figure.

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L 21308-66 EWT(1)/T IJP(c) AT  
ACC NR: AP6006193

SOURCE CODE: UR/0377/65/000/004/0023/0026

AUTHORS: Umarov, G. Ya. (Candidate of physico-mathematical sciences);  
Alavutdinov, D.; Alimov, A. K.

ORG: Physico-technical Institute, AN UzSSR (Fiziko-tehnicheskiy institut AN UzSSR)

TITLE: On the possibility of making a long focal-length evacuated film concentrator

SOURCE: Geliotekhnika, no. 4, 1965, 23-26

TOPIC TAGS: solar radiation, solar furnace, optics

ABSTRACT: The possibility of constructing a long focal-length film concentrator in an evacuated chamber is investigated. It is assumed that the surface of the concentrator is almost spherical (see Fig. 1) and that the maximum film curvature is calculated to be

$$h = \frac{D^2}{16f}$$

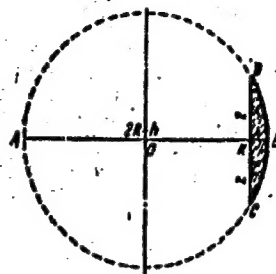
For various focal lengths and concentrator diameter, the magnitudes of h are

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L 27308-66

ACC NR: AP6006193

Fig. 1.



calculated and tabulated. It is found that the diameter of the focal point is close to the diameter of the solar image as a direct result of the fact that the concentrator has an optically exact surface. Also tabulated are the focal lengths versus the corresponding focal point temperatures, and also the focal length and the film tension. This latter can be controlled by means of an adjustable spring. It is shown that one can construct a long focal-length concentrator with  $1.5 \leq f \leq 10$  m such that the temperature at the focal point can be made to vary between 1200 to 300C. Orig. art. has: 3 figures, 3 tables, and 2 formulas.

SUB CODE: 03/13 SUBM DATE: 01Jun65/ ORIG REF: 001/ OTH REF: 001

Card 2/2

L 41047-66

ACC NR: AP6018085

(A)

SOURCE CODE: UR/0377/65/000/005/0019/0025

AUTHOR: Umarov, G. Ya. (Candidate of physico-mathematical sciences); Usyukin, V. I.  
Abutaliyev, F. B.

ORG: Physico-Technical Institute, AN UzSSR (Fiziko-tehnicheskiy institut AN UzSSR)

TITLE: Strain in the conical film reflector

SOURCE: Geliotekhnika, no. 5, 1965, 19-25

TOPIC TAGS: material deformation, solar energy conversion, shell structure, elastic deformation

ABSTRACT: The authors consider the deformation of a conical film reflector as a momentless shell of revolution which is under normal pressure and corresponding axial force. They obtain a linearized resolvent equation of the shell which yields its deformed shape for different boundary conditions. The characteristics of the reflector material are assumed to be elastic. The theoretical results are found to be in close agreement with experimental data on gas-filled conical films. Orig. art. has: 4 figures, 33 formulas.

SUP CODE: <sup>10, 13, 11</sup>  
~~12, 14~~

SUBM DATE: 20Jun65

Card 1/1-00

UMAROV, G.Ya.; ZHADRAYEV, U.Zh.

Admissible air pressure values in solar inflatable (vacuum) film  
type concentrators. Geliotekhnika no.5:26-28 '65.

(MIRA 19:1)

1. Fiziko-tekhnicheskiy institut AN UzSSR. Submitted July 6, 1965.

L 36353-66 EWT(m)/ENP(j) IJP(c) RM

ACC NR: AP6017580

(A)

SOURCE CODE: UR/0377/65/000/006/0012/0018

AUTHOR: Umarov, G. Ya. (Candidate of physico-mathematical sciences); Fayzullayev, D.F.; Nazariy, M. P.; Alimov, A. K. <sup>558</sup>

ORG: Physicotechnical Institute, AN UzSSR (Fiziko-tekhnicheskiy institut AN UzSSR)

TITLE: Study of the surface shape of paraboloid mirrors obtained by a spinning method

SOURCE: Geliotekhnika, no. 6, 1965, 12-18

TOPIC TAGS: solar furnace, solar power plant, heat reflection, parabolic body, epoxy plastic

ABSTRACT: The article deals with paraboloid reflectors made of synthetic resins by a spinning method that requires no expensive equipment or polishing. In view of the fact that shrinkage of the resin causes changes in the shape of the reflector and modifies its focusing ability, the authors analyze in detail the ultimate shape assumed by a paraboloid of revolution formed by solidification of a liquid during its rotation. To this end, they determined the form of a free surface and the interface between the two components when a heavy incompressible two-phase liquid poured in a spherical vessel rotates like a rigid body together with the sphere at constant angular velocity about a vertical axis passing through the center of the sphere. An equation is derived for the ultimate shape assumed by the solidified liquid. The results were tested by measuring the surface of epoxy resin mixed with plastifier and solidifier and made to solidify over a surface of rotating mercury. The surface of contact between the resin and the mercury turned out to be ideally smooth, while the

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